

What is claimed is:

1. A light pipe with directional side-light extraction, comprising:
 - a) a light pipe;
 - b) light-extraction means applied to the light pipe over only a part of the cross-sectional perimeter of the light pipe and over an active section in which directional side lighting is desired;
 - c) the light-extraction means comprising any of (i) material, other than a light-carrying portion of the light pipe or any fluoropolymer cladding on the light-carrying portion, including light-scattering material, (ii) surfaces treated to have light-scattering properties, and (iii) material with a reflective property.
2. The light pipe of Claim 1, wherein the active section comprises a fraction of the length of the light pipe.
3. The light pipe of Claim 1, wherein the light pipe has a substantially circular cross section.
4. The light pipe of Claim 1, wherein the lumen output as between inlet and outlet portions of the active section is within plus or minus 10 percent of the average value of each other
5. The light pipe of Claim 1, wherein the light-extraction means is a single strip of uniform width over the active section of the light pipe.
6. The light pipe of Claim 1, wherein the light-extraction means is in the form of a single strip that varies in width over the active section of the light pipe
- 20 7. The light pipe of Claim 1, wherein the light-extraction means is a strip that varies in thickness over the active section of the light pipe.
8. The light pipe of Claim 1, wherein the light-extraction means is a single strip of material containing light-scattering additives whose density varies over the active section of the light pipe.
- 25 9. The light pipe of Claim 1, wherein the light-extraction means comprises a plurality of separate shaped pieces arranged along the active section of the light pipe
10. The light pipe of Claim 9, wherein the pieces are sized, composed and arranged in such a manner as to achieve a substantially uniform distribution of light from the side of the light pipe.
- 30 11. The light pipe of Claim 10, wherein the pieces are arranged in a non-uniform manner.

12. The light pipe of Claim 10, wherein the sizes of the pieces vary along the active section of the light pipe.
13. The light pipe of Claim 4, 5, 6, 7, 8, 9 or 11, wherein:
 - a) the light pipe comprises a polymer core; and
 - b) the light-extraction means is formed from etching of the surface of the polymer core.
- 5 14. The light pipe of Claim 4, 5, 6, 7, 8, 9 or 11, wherein:
 - a) the light pipe comprises a polymer core and a fluoropolymer cladding; and
 - b) the light-extraction means comprises a material inserted between the core and the cladding.
- 10 15. The light pipe of Claim 14, wherein the material inserted between the core and the cladding comprises a light-scattering coating.
16. The light pipe of Claim 14, wherein:
 - a) the core comprises an acrylic polymer; and
 - b) the material inserted between the core and the cladding comprises an organic-solvent based paint.
- 15 17. The light pipe of Claim 16, wherein the paint is applied in discrete areas along the light pipe, with the discrete areas being spaced along the light pipe with a higher density the further the distance along the light pipe from an input light source.
18. The light pipe of Claim 4, 5, 6, 7, 8, 9 or 11, wherein:
 - a) the light pipe comprises a polymer core which is free of a fluoropolymer cladding in the active section of the light pipe; and
 - b) the light-extraction means is formed from etching of the surface of the polymer core or a coating on the core.
- 20 19. The light pipe of Claim 18, wherein the polymer core comprises an acrylic polymer.
- 25 20. The light pipe of Claim 1, wherein a substantial section of the light pipe is free of light-extraction means so as to act as a conveyance of light between a light source and a section of the light pipe with light-extraction means.
21. The light pipe of Claim 4, 5, 6, 7, 8, 9 or 11, wherein:
 - a) the light pipe comprise a polymer core; and

b) the light-extraction means comprises reflective material.

22. The light pipe of Claim 21, wherein the light pipe comprises a fluoropolymer cladding over the core.

23. The light pipe of Claim 21, wherein the light pipe is free of a fluoropolymer cladding over the
5 core.